UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Control of Surgical Robots, Faculty of Engineering and Physical Sciences

Salary: Grade 7 (£36,333 – £43,155 p.a.) Due to funding restrictions, an appointment will not be made higher than £38,474 p.a.

Reference: EPSEE1100

Closing date: Thursday 15th June 2023

Fixed-term for 2 years

We are open to discussing flexible working arrangements

Research Fellow in Control of Surgical Robots, School of Electronic and Electrical Engineering.

Do you want to make a difference in patients' quality of life by creating innovative robots that are able to treat incurable diseases? Are you excited about contributing to scientific research in surgical robotics? Are you able to think outside the box to find innovative solutions to life-threatening diseases? Do you want to join a world-leading team of roboticists, manufacturing engineers, and clinicians?

We are looking for a proactive individual to join our Science and Technology Of Robotics in Medicine (STORM) Lab, bringing their excitement for scientific research in surgical robotics with them.

At the STORM Lab, we strive to improve the quality of life for people undergoing soft-tissue surgery and flexible endoscopy by creating miniature and non-invasive robots. This includes the creation and investigation of miniature capsule-like or tentacle robots to work inside the human body. At the STORM Lab, we are designing and creating soft and compliant robotic devices that can be used within the human body to detect and cure diseases in a non-invasive way.

This vacancy is created by a major EPSRC grant (EP/V047914/1 "Terabotics–Terahertz Robotics for Surgery and Medicine") awarded to the University of Leeds, which aims at exploring how Terahertz-based imaging can contribute to the automation of surgical tasks in robotic procedures for early-stage cancer detection and removal. You will join a multi-disciplinary research team aiming at integrating innovative imaging probes into cutting-edge surgical robotic and robotic endoscopy platforms, modelling their behaviour at different steps of the surgical procedure, exploring different levels of computer assistance based on multi-modal sensing, and testing them in realistic anatomical models.

The elements related to the advanced imaging probes will be conducted in collaboration with Professor John Cunningham at the University of Leeds, and Professor Emma MacPherson at the University of Warwick.

What does the role entail?

As Research Fellow, your main duties will include:

- Developing intelligent algorithms based on multi-modal sensing for autonomous medical robots addressing both abdominal surgery (by using the dVRK) and gastrointestinal endoscopy (by leveraging existing cutting-edge robotic platforms available at the STORM Lab);
- To model, control, test and validate different levels of computer assistance in robotic surgery and robotic endoscopy for early-stage cancer detection and removal;
- Contributing to the pre-clinical assessment of developed systems in animal and/or cadaveric models in collaboration with our clinical partners;
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Making a significant contribution to the dissemination of research results by publication in leading peer-reviewed journals and by presentation at national and international meetings;
- Working independently and as part of a larger team of researchers, both internally and externally, to develop new research links and collaborations and engage in knowledge transfer activities where appropriate;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own research;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the training of both undergraduate and postgraduate students, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

What will you bring to the role?

As Research Fellow, you will have:

- A PhD (or have submitted your thesis before taking up the role) in one of the following disciplines: Mechanical Engineering, Biomedical Engineering, Computer Science, Electronic Engineering, Robotics or a closely allied discipline;
- Experience and a proven track record in robotic manipulation, motion modelling, motion planning, motion control, inertial sensing, Bayesian filtering, and validating innovative robotic systems, with a high level of analytical and computing skills (Python, C/C++, Java, Robot Operating System (ROS), and Mathworks MatLab are preferred);
- Experience of working with the dVRK or other research-grade surgical robotic platforms;
- Good time management and planning skills, with the ability to meet tight deadlines and manage competing demands effectively without close support;
- A developing track record of peer-reviewed publications in international journals;
- Excellent communication skills both written and verbal, and the ability to communicate your research at national and international conferences;
- A proven ability to work well both individually and in a team;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience in artificial intelligence and/or machine learning;
- Experience of collaborating with clinicians, including in pre-clinical trials in animal or cadaver models;
- Experience of pursuing external funding to support research.

How to apply

You can apply for this role online; more guidance can be found on our How to Apply information page. Applications should be submitted by **23.59** (UK time) on the advertised closing date.

Contact information

To explore the post further or for any queries you may have, please contact:

Pietro Valdastri, PhD, Chair in Robotics and Autonomous Systems
Tel: +44 (0)113 343 3706
Email: P.Valdastri@leeds.ac.uk

Additional information

Faculty and School Information
Further information is available on the research and teaching activities of the Faculty of Engineering & Physical Sciences, and the School of Electronic and Electrical Engineering.

A diverse workforce
As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Engineering and Physical Sciences we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian and ethnically diverse people; people who identify as LGBT+; and people with disabilities. Candidates will always be selected based on merit and ability.

The Faculty of Engineering and Physical Sciences are proud to have been awarded the Athena SWAN Silver Award from the Equality Challenge Unit, the national body that promotes equality in the higher education sector. Our equality and inclusion webpage provides more information.

Working at Leeds
We are a campus-based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our Working at Leeds information page.

Information for disabled candidates
Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found on our Accessibility information page or by getting in touch with us at hr@leeds.ac.uk.

Criminal record information

Rehabilitation of Offenders Act 1974
A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our Criminal Records information page.